

CLAIMS

1. **(Currently amended):** A process for improved performance in at least one fuel cell comprising a cathode, an anode, an anode chamber, a cathode chamber, a liquid comprising an anolyte that flows through the cell, and a catholyte gas, wherein the fuel cell is connected to an external load, and wherein the process comprises:

(a1) taking the load off the fuel cell; and

(a2) cycling between a minimum voltage and at least about 50% of a maximum voltage drawn from the fuel cell until a maximum current is reached; or

(a3) cycling between a minimum load, and at least about 50% of ~~the~~ a maximum load, until a maximum voltage is reached.

2. **(Original):**The process of claim 1 wherein minimum voltage is about 0.1 to about 30% of the maximum voltage.

3. **(Currently amended):**The process of claim 1 wherein ~~cycling~~ cycling is between a minimum voltage and about 60 to about 90% of the maximum voltage.

4. **(Original):**The process of claim 1 wherein the fuel cell is a direct feed fuel cell.

5. **(Original):**The process of claim 4 wherein the fuel is in the liquid or vapor phase.

6. **(Original):**The process of claim 5 wherein the fuel is an alcohol or an ether.

7. **(Original):**The process of claim 6 wherein the alcohol is methanol or ethanol.

8. **(Original):**The process of claim 6 wherein the ether is diethyl ether.

9. **(Original):**The process of claim 3 wherein cycling is between a minimum voltage and about 90 to about 100% of the maximum voltage.

10. **(Original):** The process of claim 1 wherein minimum load is about 0 to about 5% of the maximum load.

11. **(Currently amended):** The process of claim 1 wherein ~~cycling~~ cycling is between a minimum load about 60 to about 90% of the maximum load.

12. **(Original):**The process of claim 11 wherein cycling is between a minimum load and about 90 to about 100% of the maximum load.

13. **(Original):**The process of claim 1 wherein before step (a2) or (a3), the process further comprises:

(b) clearing the fuel cell of any liquid present therein to achieve a resistance of at least about 10% higher than the value before clearing the cell of any liquid; and

(c) starting the flow of anolyte through the fuel cell.

14. **(Currently amended):**The process of claim 13 wherein the clearing of the fuel cell of any liquid present therein is achieved by:

(b1) stopping the flow of anolyte through the fuel cell; and

(b2) providing a continuous flow of catholyte gas through the fuel cell for at least 30 ~~seconds~~; seconds.

15. **(Original):**The process of claim 13 or 14 further comprising:

(d) oxidizing the residual fuel in the fuel cell.

16. **(Original):**The process of claim 15 wherein oxidizing the residual fuel in the fuel cell is achieved by breaking the electrical connection between the cathode and anode.

17. **(Original):**The process of claim 15 wherein oxidizing the residual fuel in the fuel cell is achieved by applying a constant voltage in the range of about 0.005 V to about 0.8 V per cell.

18. **(Original):**The process of claim 13 or 14 wherein before step (c), the anode chamber is purged with air.

19. **(Original):**The process of claim 13 or 14 wherein before step (c), the anode chamber is purged with nitrogen.

20. **(Original):**The process of claim 13 or 14 wherein after step (a1) the anode chamber is purged with water.

21. **(Original):**The process of claim 15 wherein before step (c) the anode chamber of is purged with air.

22. **(Original):**The process of claim 13 or 14 wherein the before step (c), the cathode chamber is purged with air.

23. **(Original):** The process of claim 18 wherein the cathode chamber is purged with air.

24. **(Original):** The process of claim 22 wherein the cathode chamber is purged with air for at least 10 seconds.

25. **(Original):** The process of claim 23 wherein the cathode chamber is purged with air for at least 10 seconds.

26. **(Original):** The process of claim 23 wherein the anode chamber is purged with air after the cathode chamber is purged.

27. **(Original):** The process of claim 23 wherein the anode chamber is purged with nitrogen after the cathode chamber is purged.

28. **(Original):** The process of claim 26 wherein the air comprises exhaust air from the cathode chamber.

29. **(Original):** The processes of claim 26 wherein the anode chamber is purged for about 2-15 minutes.

30. **(Original):** The processes of claim 27 wherein the anode chamber is purged for about 2-15 minutes.

31. **(Original):** The processes of claim 30 wherein the anode chamber is purged for about 2-15 minutes.

32. **(Currently amended):** The processes of claim 29, ~~30 or 31~~ wherein the anode chamber is purged for about 5-15 minutes.

33. **(Original):** The processes of claim 32, wherein the anode chamber is purged for about 10-15 minutes.

34. **(Original):** The process of claim 1 wherein the resistance reached is at least about 20% higher than the value before clearing the cell of any liquid.

35. **(Original):** The process of claim 34 wherein the resistance reached is about 100 to about 500% higher than the value before clearing the cell of any liquid.

36. **(Original):** The process of claim 1 or 13 wherein fuel cells are in a stack.

37. **(Original):** The process of claim 15 wherein fuel cells are in a stack.